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Ural Arslangulov

Nottingham Trent University
University of Sunderland in London

ural.arslangulov@sunderland.ac.uk

Rob Ackrill

Nottingham Trent University

robert.ackrill@ntu.ac.uk

Agency and agents in multiple windows of opportunity: decarbonising the automotive industry in the UK

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Policymakers and policy papers linked with transformation of the automotive industry in the UK between 2018-2022

Date of release	Title of policy paper	Secretary of State	Department
27 November 2017	The UK's Industrial Strategy	Rt Hon Greg Clark MP (Conservative Party)	Business Energy and Industrial Strategy (BEIS)
9 July 2018	Road to Zero Strategy	Rt Hon Chris Grayling MP (Conservative Party)	Department for Transport (DfT); and Office for Low Emission Vehicles (OLEV)
18 November 2020	The Ten Point Plan for a Green Industrial Revolution	The Rt Hon Alok Sharma MP (Conservative Party)	Business, Energy and Industrial Strategy
25 March 2022	UK Electric Vehicle Infrastructure Strategy	Rt Hon Grant Shapps MP (Conservative Party)	Department for Transport

Policy priority in policy papers creating a market for zero tailpipe emissions vehicles in the UK

Policy paper	**Policy priority linked with transformation of the automotive industry**
The UK's Industrial Strategy	“support electric vehicles through £400m charging infrastructure investment and an extra £100m to extend the plug-in car grant”, making “25% of all cars in the central government department fleet ultra-low emission by 2022” (HM Government, 2017, pp. 50, 128)
Road to Zero Strategy	“put the UK at the forefront of the design and manufacturing of zero emission vehicles, and for all new cars and vans to be effectively zero emission by 2040” (Department for Transport, 2018, p. 2)
The Ten Point Plan for a Green Industrial Revolution	“end the sale of new petrol and diesel cars and vans from 2030”, “allow the sale of hybrid cars and vans that can drive a significant distance with no carbon coming out of the tailpipe until 2035” (HM Government, 2020, p. 14)
UK Electric Vehicle Infrastructure Strategy	installing a minimum of 300,000 public chargepoints by 2030, “but there could potentially be more than double that number” (Department for Transport, 2022, p. 44); standardisation of connectors of all devices on the UK public network (Department for Transport, 2022, pp. 5, 26).

Agents identified in the case of transformation the automotive industry in the UK between 2018-2022

Policymakers – *senior officials of the Department for Transport (DfT), Office for Low Emission Vehicles (OLEV), Department for Business, Energy & Industrial Strategy (BEIS);* individuals involved in formulating, developing or amending policy

Policy entrepreneurs at the national level – *senior officials of carmakers*; individuals who work from outside the formal governmental system to introduce, translate, and implement innovative ideas into public sector practice (Roberts and King, 1991)

Bricoleurs at the national level – *senior representatives of bodies of the Electric Vehicle Energy Taskforce (EVET);* individuals who make suggestions for particular policies based on their knowledge, knowing which policy ideas the policymakers are ripe to, wherein they recombine policy ideas into bespoke policy solutions that fit a specific problem and which are capable of solving it (Deruelle, 2016)

Knowledge brokers – *scientist;* individuals who frame only knowledge in order to be understandable in the political world (Zohlnhöfer & Rüb, 2016)

Problem brokers – *senior officials of carmakers, scientist;* individuals who operate by connecting values, emotions and knowledge in order to frame a condition as a problem (Knaggård, 2015)

Technology innovators – *senior officials of carmakers;* individuals whose entrepreneurial activities related to the technology stream and focusing on the promotion the innovation by coupling "a technology narrative with a socio-political agenda" (Goyal, Howlett and Chindarkar, 2020)

Interrelations in multiple windows of opportunity, multiple streams and industry trajectories

Agent	**In which window couple streams**	**What streams couple**	**In which stream work**	**Inside or outside the government systems**	**Type of leadership**	**Preference to a specific solution**	**Type of solution – technological or policy**
Policy entrepreneurs at the national level	Problem, Politics	Policy, problem, politics and industry trajectories	Problem, Policy, Industry Trajectories	Outside	Appointed leadership, senior managers of carmakers	Has preference	Technological and policy solution
Bricoleurs at the national level	Problem, Politics	Policy, problem, politics	Policy	Outside	Appointed leadership	Preference ripe to policymakers	Technological and policy solution
Knowledge brokers	na	na	Frame knowledge	Outside	na	No preference	na
Problem brokers	na	na	Problem	Inside and outside	Appointed leadership	Has preference	Policy and technological solution
Technology innovators	Technolo-gical	Industry trajectories	Industry trajectories	Outside	Appointed leadership	Has preference	Technological solution

Agency within multiple types of windows of opportunity

Agency within Technological Window of Opportunity

- Agent - Technology Innovators
- Coupled trajectories – energy supply (renewable energy, EV charging), energy storage (battery), and automotive industry trajectories
- Outcome – production cost effective mass market EVs capable of using universal charging system
- Year - 2015

Agency within Problem Window of Opportunity (problem WoO was a reason for opening policy WoO)

- Agent - Technology Innovators who act as Problem Brokers
- Problem – Intensify the shift to EVs
- Coupled streams and trajectories - energy supply (renewable energy, EV charging), energy storage (battery), and automotive industry trajectories
- Outcome - the need to use a universal charging system for the EV uptake; the need for UK Electric Vehicle Infrastructure Strategy
- Year - 2020

Agency within multiple types of windows of opportunity

Agency within Policy Window of Opportunity

- Agent - Technology Innovators who act as Policy Entrepreneurs and offering policy ideas; Bricoleurs who recombine of policy ideas of Policy Entrepreneurs into bespoke policy solution
- Policy proposal - UK Electric Vehicle Infrastructure Strategy that focusing on universal charging system
- Coupled streams and trajectories - energy supply (renewable energy, EV charging), energy storage (battery), automotive industry trajectories, problem stream, politics and policy stream
- Outcome – policy proposal that was present to the government; UK Electric Vehicle Infrastructure Strategy which include policy ideas of Policy Entrepreneurs was released in 2022
- Year – 2020

Agency within Market Window of Opportunity

- Agent - Technology Innovators, Policymakers
- Coupled trajectories – energy supply (renewable energy, EV charging), energy storage (battery) and automotive industry trajectories
- Outcome – intensify market uptake by EVs using universal charging system
- Year – 2022

Visualisation of Multi-level Governance and Strategy (MLGS) model

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